alberta's species at risk program

MULTISAR

A Multi-Species Conservation Strategy For Species at Risk In the Grassland Natural Region of Alberta

2011-2012 Report

Alberta Species at Risk Report No. 144

Alberta Conservation Association

Conserving Alberta's Wild Side

PRAIRIE CONSERVATION FORUM

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EXECUTIVE SUMMARY

2011-2012 was another successful year for the MULTISAR project. Despite a cool and moist spring and wet summer delaying field work, most of the activities planned for the year under the three programs of the current MULTISAR business plan were completed.

The Habitat Conservation Program includes the development of detailed Habitat Conservation Strategies (HCS) in the core project area of southern Alberta, as well as the more compact Species at Risk Conservation Plans (SARC Plans) delivered throughout the Grassland Natural Region. In 2011-2012, new HCSs were developed on five ranches totaling approximately 17908 acres. Associated habitat enhancement projects were also developed to improve the habitat of key wildlife species. A number of habitat projects were developed on HCS properties. These varied from weed control, native prairie restoration, water development, wildlife-friendly fencing, shrub planting and tree protection. In addition, SARC Plans and their associated beneficial management recommendations for wildlife habitats were developed on 10 private ranches totaling approximately 8079 acres.

The Education, Outreach and Awareness program was greatly scaled back this year due to reduced resources. However, MULTISAR staff were able to give presentations to landowners, wildlife and conservation groups, college students and the general public, in addition to participating in two grassland awareness endeavors in collaboration with other conservation groups. MULTISAR staff also presented at a national workshop and presented a poster at a national conference. Communication materials, including two issues of MULTISAR's newsletter, 2 fact sheet updates were produced and a ferruginous hawk nest pole fact sheet was developed. In total, MULTISAR made over 361 different contacts with more than 1506 people including landholders, the general public, academia, industry, media, government and non-government organizations and other sectors.

Under the Research and Monitoring Program, MULTISAR continued implementing its monitoring and evaluation protocol to assess the directionality of habitat improvements and management changes and the effectiveness of its habitat conservation strategies. A subsample of range sites and wildlife points were revisited on the first MULTISAR HCS ranch to determine if management recommendations had been implemented and their impact on species at risk habitat. In addition a questionnaire was developed to monitor the adoption of beneficial management practices for key wildlife species and changes in perceptions toward species at risk after the development of an HCS.

As MULTISAR grows through time, so does the amount of data and information that has been collected since its inception in 2002. Efforts continued to centralize all data in a secure repository location that could be readily accessed by MULTISAR project staff from the three partnering organizations.

1.0 INTRODUCTION

With its 9,694,650 ha the Grassland Natural Region was once a vibrant and biologically diverse ecosystem in Alberta. With settlement and the agricultural and industrial transformations that followed, almost 70% the original native grasslands from the region has been lost and converted to other land uses (derived from Resource Data Branch 1998). What remains supports the majority (75%) of Alberta's species at risk and is facing increasing pressure from population growth and associated human development. Attempting to maintain or return multiple prairie wild species to sustainable population levels over such a large region presents a formidable challenge.

MULTISAR originated from the need to address the conservation of multiple prairie species at a landscape levelin a way that is embraced by the ranching community who manages the bulk of the remaining native prairie grasslands in Alberta. MULISAR stands for "Multiple Species At Risk", but it also reflects the ideology of multiple organizations working in partnership with land owners and land managers on an interdisciplinary approach beneficial to cattle ranching and to the health and sustainability of the native prairie ecosystem and the species at risk it supports.Partners in the MULTISAR conservation project include landholders, the Alberta Conservation Association (ACA), Alberta Sustainable Resource Development-Fish and Wildlife (ASRD-F&W) and Lands (ASRD-Lands), and the Prairie Conservation Forum (PCF). It is recognized under the 2009-2014 Alberta Strategy for the Management of Species at Risk (Fish and Wildlife Division 2008) as an efficient means to implement recovery and management actions for species at risk in the Grassland Natural Region.

The MULTISAR project is guided by the 2009-2014 Business Plan. The mission, vision and goals are:

Vision: Multiple species of wildlife, including species at risk, are effectively conserved at the landscape level, through a process that integrates landuse[1] management with fish and wildlife management principles, and in a manner that may contribute to the species and habitat recovery and to the sustainability of the rural economy.

Mission: To develop and implement the MULTISAR process which directs conservation of multiple species at risk, associated fish and wildlife and their habitats, within the Grassland Natural Region of Alberta.

Goal: To assist landowners and lessees to manage land to benefit provincial and federal species at risk, while maintaining an economically viable operation.

[1]Landuse management refers to both range management principals and management of the various land uses (including industrial developments) on the landscape.

MULTISAR consists of three primary components; 1) a Habitat Conservation Program with detailed Habitat Conservation Strategiesdeveloped in high priority species at risk areas, and the more condensed Species At Risk Conservation Plans delivered in the entire Grassland Natural Region,2)an Education, Outreach and Awareness Program providing stewardship tools (fact sheets on Beneficial Management Practices (BMP) and guides to living with species at risk), information brochures, school education program,and 3) a Research, Monitoring and Evaluation Program where project data are collected, analyzed, and interpreted to assess the success of the three program areas and of the MULTISAR project at achieving their objectives. The following chapters outline the accomplishments for MULTISAR under these three project components for the fiscal year 2011-2012.

1.1 Literature Cited

Fish and Wildlife Division. 2008. Alberta's Strategy for the Management of Species at Risk (2009-2014). Alberta Sustainable Resource Development, Fish and Wildlife Division, Edmonton, AB. 30 pp.

Resource Data Branch. 1995. Native Prairie Vegetation Inventory (Grassland Natural Region). Alberta Sustainable Resource Development.

2.0 EDUCATION, OUTREACH AND AWARENESS

2.1 Introduction

In its continued reduced capacity, MULTISAR managed to undertake several activities and develop products to further education, outreach and awareness of species at risk, native prairie habitats and their beneficial management practices. MULTISAR remains committed to delivering interactive, activity-based programming and producing awareness material. Participation in community events such as grazing schools, watershed meetings, education programs and other forums were also important, providing up to date information on species at risk and grassland management, and supporting partners outreach programs when possible.

2.2 Landholder Awareness

2.2.1 At Home on the Range, Grassland Gazette and other Information Brochures

MULTISAR's flagship booklet, *At Home on the Range: Living with Alberta's Prairie Species at Risk,* continues to be handed out to landholder cooperators and mailed out periodically to all Alberta Sustainable Resource Development (ASRD) and county and municipal district offices, provincial parks and Members of the Legislative Assembly (MLAs) of Alberta constituency offices in the Grassland Natural Region. The booklet was also offered at a number of conservation group and landowner meetings and field tours throughout the year. Two issues (summer and winter) of MULTISAR's newsletter, the *Grassland Gazette*, were produced in the spring and the fall of 2011. The newsletter was mailed out along with the *At Home on the Range* booklet to all MULTISAR cooperating landholders. In total, 1009copies of the *At Home on the Range* booklet and 1039 copies of the *Grassland Gazette* were distributed. A new fact sheet called *Artificial Nest Poles for Ferruginous Hawks* was also developed. Moreover, a total of 539 beneficial management practices fact sheets and additional information brochures were distributed.

2.2.2 Southern Alberta Grazing School for Women

The 8th Annual Southern Alberta Grazing School for Women was held on July 27 - 28th, 2011 at ChainLakesProvincialPark. This two day event is geared toward women from the ranching and farming community, where tools for grazing management are the primary focus. This year, approximately 38 women attended the grazing school, where topics ranged from rangeland and riparian health, stocking rates and selecting herd sizes. Attendees also participated in several field sessions where they learned how to complete riparian and range health assessments and were treated to an electrofishing demonstration

by the Alberta Conservation Association. Once again, MULTISAR was on the organizing committee for the event and had several female staff involved.

2.2.3 Presentations to Landholder Groups

Presentations were given to landowner groups on two occasions. On June 18th, an overview of the program, species at risk in the grassland region and Species At Risk Conservation Plans (SARC Plans) was given to a watershed group in the Airdrie area. On September 18th, a short presentation was given on SARC Plans at a community gathering near Pincher Creek.

2.3 Youth Education

MULTISAR was involved in youth education programs on three occasions. On May 4-5th, MULTISAR and the Nature Conservancy of Canada combined forces on the Sandstone Ranch south of Magrath to present a hands-on field education program on the prairie grassland ecosystem to a group of 29 grade 11 students from the Edmonton area. On July 20th, MULTISAR gave a grassland bird presentation to 20 youth at Writing-on-StoneProvincialPark during a "Youth Range Days" event organized by the County of Cardston and the County of Warner. On September 20th, MULTISAR collaborated with the Alberta Conservation Association and gave a field education program that highlighted the importance of riparian areas for wildlife species and species at risk to 90 Junior High and High School students from Southwestern Alberta.

2.4 Public Outreach

2.4.1 Conferences and Workshops

In 2011-2012, MULTISAR gave two presentations at a workshop and at a conference. MULTISAR gave a presentation titled "*The Important Connection between Native Prairie and Species at Risk*" at the *2012 Native Prairie Restoration/Reclamation Workshop:Bridging the Gap* hosted by the Saskatchewan Prairie Conservation Action Plan in Saskatoon,SK on February 8-9th, 2012. In addition, MULTISAR gave a presentation title *MULTISAR: (Multiple Species At Risk): a look back on 10 years of collaboration* at the *22nd Annual Meeting and Conference of the Alberta Chapter of The Wildlife Society* held in Medicine Hat, AB on March 16-18th, 2012.

2.4.2 Presentations and Displays to Interest Groups

MULTISAR gave seven presentations to various interest groups and set up five displays throughout southern Alberta and in Saskatchewan in 2011-2012. On July 15, 2011, MULTISAR gave a presentation on raptors to park users at Writing-on-StoneProvincialPark. On August 19th, 2011, MULTISAR gave a presentation on grassland birds to park users at Writing-on-StoneProvincialPark. On September 6, 2011 MULTISAR presented to the ACA Board of Directors about habitat enhancements for

wildlife. On September 27th, MULTISAR gave an update on summer activities to members of the Prairie Conservation Forum at their meeting in Wainwright, AB. On November 18th, 2011, MULTISAR gave a presentation about species at risk, native prairie habitats and the MULTISAR program as part of the Wildlife-in-the-Wind Speaker Series organized by the Alberta Chapter of the Wildlife Society in Lethbridge, AB. The same presentation was given on January 19th, 2012 during the Annual General Meeting of the Prairie Conservation Forum held in Okotoks, AB. Finally, on January 24th, 2012, MULTISAR presented to the Government of Alberta Species At Risk Program on how MULTISAR implements recovery actions. Displays were set up in Milk River, AB during the Milk River Watershed Council Canada Annual General Meeting on April 6th, 2011; at Chain Lakes Provincial Park during the 8th Annual Southern Alberta Grazing School for Women, on July 27 - 28th, 2011; in Lethbridge, AB during the Society for Range Management (International Mountain Section) meeting, on October 28, 2011; in Saskatoon, SK during the Native Prairie Restoration/Reclamation Workshop on February 8-9th, 2012; and in Medicine Hat during the Alberta Chapter of the Wildlife Society meeting on March 16-18th, 2012.

2.4.3 Web Site

The MULTISAR website (www.multisar.ca) continues to be the key portal where up-to-date information about the project, beneficial management practices (BMPs) for species at risk, as well as related documents, news events, and producer stories can be accessed. A new back end application was added to the site to facilitate updates by staff.

2.4.4 Contacts and Outreach

Through the course of any fiscal year MULTISAR staff interacts on a daily basis with landholders and other individuals representative of a broad diversity of sectors. Between April 2011 and March 2012, a total of 361 contacts were made with 1506 people through direct visits, phone calls, e-mails or presentations, cumulating to 403 hours (Table 1). Excluding thirteen presentations that accounted for 731 people, contacts with rural landholdersto discuss the MULTISAR project, species at risk or various aspects of rangeland management made up 38% of all individuals reached.

Table 1.MULTISAR contacts for 2011-2012

Contact Type	Number of Contacts	Number of People
Academia	6	18
Company	10	16
Consultant	7	10
Contractor	19	27
Government	71	160
Individual (non-landholder)	10	11
Industry	3	5
Landholder	153	249
Landowner Group	2	45
Media	4	4
Non-Government Organization	57	592
School	5	130
Other	14	239
Total:	**361**	**1506**

2.4.5 Media Exposure

MULTISAR received attention in 4 different articles from 3 different media this year (Table 2). This included the writing of two articles and giving one interview.

Table 2.Media exposure MULTISAR received in 2011-2012.

Media Name	Topic of Story	Date
The Western Producer	MULTISAR program: "Saving wildlife habitat becomes a group project"	August 25, 2011
The Western Producer	"Solutions found to dangerous fences that entangle wildlife".	August 25, 2011
Conservation Magazine	"Native seeds bring promise to the prairies" – native grassland restoration	Spring/Summer 2011
Amphibians on my Land: Habitat Stewardship in Agricultural Landscapes	"Connecting with frogs: a kind of fairy tale of stewardship on the Balog Ranch"	2011

2.5 Summary of Activities

- Distributed 1009 *At Home on the Range* booklets, two issues (1039 copies) of MULTISAR's newsletter the *Grassland Gazette* and 539 fact sheets and other information brochures.
- Developed a new fact sheet on Ferruginous Hawk artificial nesting platforms.
- Participated in organizing and delivering the 8th Southern Alberta Grazing School for Women.
- Organized and collaborated in the delivery of field education programs for 139 students.
- Gave two presentations to two landowner groups.
- Gave two presentations at a conference and at a workshop.
- Gave seven presentations to various interest groups and set up five displays throughout southern Alberta and in Saskatchewan
- Interacted with 1506 individuals from various demographic groups.
- Completed two articles and gave one interview in five media articles that discussed the MULTISAR project.
- Updated the MULTISAR website with new stories and information and improved the way staff can update the web site.

3.0 HABITAT CONSERVATION STATEGIES

3.1 Introduction

MULTISAR's Habitat Conservation Strategies (HCSs) strive to balance the conservation needs of multiple species at risk, with the need for healthy rangelands and a sustainable ranching operation on both publicly and privately owned lands in the Milk River, Pakowki Lake, and St. Mary's River Basins. MULTISAR HCSs result from intensive and detailed property evaluations comprised of range inventories, range health assessments, riparian health assessments, and various wildlife surveys. Following these evaluations, stewardship goals and objectives for enhancements and/or conservation are established for each property. All conservation targets are agreed upon by all parties involved in the HCS process and the aspired end result of an HCS is to provide benefits to both the rancher and species at risk.

HCSs are focused in priority areas which were determined and delineated by Multiple-species Conservation Values (MCVs; for more information on MCVs, refer to Downey *et al.* 2008). Areas with high MCVs in southern Alberta include, but are not limited to, the Milk River, Pakowki Lake and St. Mary's River Basins, regions east of Hanna, west of Cardston, and east of the Porcupine Hills.

3.2 HCS Process

For a complete and detailed description of the HCS process including survey design, please refer to MULTISAR's 2010-2011 progress report (Rumbolt *et al.* 2011).

3.2.1 HCS Surveys and Inventories

To effectively manage multiple species at risk at a landscape level it is necessary to comprehend species' habitat requirements, be able to determine what species are present, determine current habitat conditions and availability, as well as identify land uses within the area. Initially, the baseline data gathered from wildlife surveys, range health assessments, detailed vegetation inventories, and riparian health surveys is used to develop a landholder specific management plan. In the long term, the data collected will provide the baseline to measure the effects that enhancements and management changes will have on wildlife habitats and populations, particularly those related to species at risk. Inventories and monitoring allow MULTISAR to gauge which areas are most valuable for species at risk and if any land use practices present a threat to habitat and/or species at risk. In 2011-2012, HCSs were completed for five properties, the results of which are summarized below.

3.2.1.1 Multi-species Point Count Surveys

Multi-species point count surveys were completed on all five HCS properties in 2011-2012. This process involved recording all wildlife seen and heard within 50 m, 100 m, and/or 200 m from pre-determined survey locations. Multi-species point count surveys usually commence mid-May; however, due to inclement weather during the spring months of 2011, surveys were slightly behind schedule and did not begin until the end of May. All surveys were completed by the end of the first week of July. The multi-species point count survey is the core wildlife survey method utilized for HCS's, however, MULTISAR also conducts targeted surveys, which are discussed below.

3.2.1.2 Amphibian Surveys

On all HCS cooperating properties, permanent and ephemeral wetlands, dugouts, and rivers were searched for amphibians following Kendell (2002) protocols. If amphibians were found, a GPS location was noted and habitat information was recorded. One night time amphibian call survey was also conducted on a participating HCS property.

3.2.1.3 Researching Amphibian Numbers in Alberta

The large precipitation events needed to conduct night time amphibian surveys for the Researching Amphibian Numbers in Alberta (RANA) program did occur in 2011. Three routes were completed by MULTISAR and ASRD staff following methods described in Downey (2006), however none of these were on co-operating properties.

3.2.1.4 Reptile Surveys

A snake hibernacula survey was conducted on two new HCS properties, and on one existing HCS property. These surveys were conducted using the survey protocol described in the Sensitive Species Inventory Guidelines (ASRD 2010a). MULTISAR staff successfully found three active hibernacula.In addition, one greater short-horned lizard (*Phrynosomahernandesi*) survey was completed on one of the new propertiesand on one existing property following protocols described by James (2002). These searchesdid not detect any lizards.

3.2.1.5 Mammal Surveys

- Trail camera:
  During the spring and summer of 2011, Infrared Reconyx[©] trail cameras were positioned on two HCS properties. Two cameras documented wildlife use within a coulee system at one HCS property. One of these cameras documented wildlife use at a cottonwood community and the other was set up at a thorny buffaloberry(*Shepherdiaargentea*) community.At the other HCS property, the camera documented wildlife usage within an area where silver sagebrush(*Artemisia cana*) plugs were recently planted.

3.2.1.6 Bird Surveys

- Grouse:
  Each spring, MULTISAR helps survey all greater sage grouse (*Centrocercusurophasianus*) leks found on HCS cooperators' land during the provincial ASRD sage grouse census. A total of two leks were surveyed in 2011, each on a different HCS property. Both leks were active. Time permitting; MULTISAR also assists surveys of historical sharp-tailed grouse (*Tympanuchusphasianellus*) leks found on HCS cooperators' land for the Lethbridge Fish and Wildlife office. Surveys follow the protocols outlined by ASRD-FWD (ASRD 2010a). Sharp-tailed grouse surveys, looking for previously unrecorded leks, were conducted on one new HCS property. It should be noted that the spring of 2011 had inclementweather and not all new HCS properties could be assessed.

- Burrowing owl:
  In conjunction with the multi-species surveys, an electronic playback survey was conducted on HCS properties following ASRD-FWD protocols (ASRD 2010a) in areas with high potential for burrowing owls (*Athenecunicularia hypugaea*). No active sites were located, however, three burrows were located that showed signs of activity earlier in the spring and were abandoned.

- Loggerhead shrike:
  In 2011, MULTISAR completed a canoe survey targeting loggerhead shrikes (*Lanusludovicianus*) along the Milk River. The survey included portions of one new and one existing HCS property. A total of 37 shrikes (11 young of year and 26 adults) were detected during the survey.

- Ferruginous hawk:
  Every 5 years, ASRD conducts provincial ferruginous hawk (*Buteoregalis*) block surveys, with the last census being completed in 2005. There are over 100 blocks of which approximately 30 are within MULTISAR's core HCS study area. MULTISAR and ASRD try to survey these 30 blocks annually regardless of the provincial 5 year cycle. In 2011, ten blocks were completed by MULTISAR biologists with surveys following the protocols laid out by Downey (2005).

- Raptor nest searches:
  A search of riparian and other treed or shrubby areaswere completed during multi-species surveys to identify all raptor tree nests and nests along cliffs or coulees. A GPS location was taken as close as possible to all nests, either active or inactive and the number of young birds observed was recorded.

3.2.1.7 Riparian Health Inventories

In 2011, ten riparian health inventories were conducted on HCS properties. Depending on the habitat type, these sites were assessed using either Lotic or Lentic Inventory Health Assessment protocols (Cows and Fish 2010).

3.2.1.8 Range Inventories

A.) Field Methods:

For a detailed description of the methods used in range inventories, please refer to MULTISAR's 2010-2011 progress report (Rumbolt *et al.* 2011).

B.) Determining Grazing Capacity:

The relative composition and abundance of the individual species, in conjunction with the range site description are used to determine the range plant community. The *Range Plant Communities and Range Health Assessment Guidelines for the Dry Mixedgrass, Mixedgrass and Foothills Fescue Natural Subregions of Alberta* (Adams *et al.* 2005b, Adams *et al.* 2005c, Adams *et al.* 2005d) are used to determine the plant community for the individual range sites.

The plant community guides provide suggested stocking rate values for each predetermined plant community, called an ecologically sustainable stocking rate (ESSR).The ESSR reflects the maximum number of livestock a particular plant community can support (Adams *et al.* 2005b). When the ESSR is multiplied by the area of a range site, the result is a carrying capacity, reported in animal unit months (AUMs). Carrying capacity sometimes needs to be adjusted to take into account limiting factors such as grazing distribution, multiple use, and range health. This adjustment (reduced value) results in the grazing capacity, which is also reported in AUMs.

An AUM is defined as the amount of dry matter or forage that one animal unit (AU) uses in one month. The standard AU grazing animal is a 1,000 lb cow with or without an unweaned calf up to six months of age. This value was set from the past when cattle were smaller bodied size. Because today's grazing animal is larger, adjustments must be made to this standard to compensate for a larger animal consuming more forage. Similarly, smaller animals such as weaned calves and yearlings consume less forage, and therefore are adjusted down. Weaned calves are often adjusted to 0.5 AUs, yearling steers or heifers are adjusted to 0.75 AUs and bulls are adjusted to 1.5 AUs.

C.) Range Health:

Range heath is a measurement defined as the ability of rangelands to perform key functions. The five indicators of range health are productivity, site stability, capture and beneficial release of water, nutrient cycling, and plant species diversity (Adams *et al.* 2005a).

A range health score ranking in the healthy category indicates that all the key functions of the rangeland are being performed and are functioning properly. This suggests that current management (stocking levels, grazing distribution, etc.) is in line with the capacity of the rangeland and grazing will be optimal. A rating of healthy with problems states that not all of the key functions are being performed. This suggests that these areas should be monitored and perhaps minor adjustments should be made to management

practices to ensure recovery to a healthy class. An unhealthy score means that few of the key functions are being performed and urgent action is required to significantly alter management practices. However, there are some significant wildlife species that thrive in varying range conditions and depending on management goals, alterations may or may not be required.

D.) Results by Property:

MULTISAR 18: This property consists of approximately 1280 ac. Six detailed transects and one additional range health assessments were completed on the property.

MULTISAR 19: This property is approximately 14,300 ac in size. One hundred and one (101) detailed transects were conducted on this property as well as 35 additional range health and tame health assessments.

MULTISAR 20: This property is approximately 2026 ac in size. Forty detailed transects and ten additional range health assessments were conducted on this property.

MULTISAR 21: This property is approximately 72 ac in size and in total. Three detailed transects with associated range health assessments were conducted on the property.

MULTISAR 22: This property consists of approximately 310 ac in total. Three detailed transects with associated range health assessments were conducted on the property.

3.2.1.9 Wildlife and Range Health Inferences

Data gathered from both the detailed wildlife and range health surveys were compiled and entered into ArcGIS for mapping. The maps created displayed range health and wildlife sightings within the various management units (pastures) per GVI polygon for each HCS landholder. MULTISAR staff were then able to visually relate range health to various wildlife species and habitat features to establish a management plan for each management unit that incorporates BMPs for sustainable ranching and conservation of species at risk.

3.2.2 Evaluation and Monitoring Protocols

Over the past two years, MULTISAR has established a formal evaluation and monitoring protocol for HCSs. To ensure that data is collected consistently, concisely and effectively year after year, the new protocol outlines specific timelines for monitoring and evaluation and all tasks that accompany them. In addition, a revamped MULTISAR HCS enhancement database is in place to house data collected during evaluations and monitoring (See Section 5.0 for further details).

3.3 MULTISAR's Achievements

Since 2004, field work has been completed on 22 HCSs under MULTISAR encompassing approximately 256,729 acres within the Milk River, Pakowki Lake, and St. Mary's River Basins (Table 4).

Table 3. Habitat Conservation Strategy participation summary

Year[a]	# of Landholder Participants in the Program	Acres Surveyed
2004	2	60,528
2005	1	160
2006	10[b]	79,091
2007	2	48,667
2008	2	7,183
2009	3	38,515
2010	5	4,677
2011	5	17,908
Total	30[c]	256,729

[a] HCSs were counted in the year in which field work was initiated, however, some surveys continued over more than one year.

[b] In 2006 MULTISAR absorbed the Western Blueflag Program and its 8 participating landholders.

[c] Some HCS properties accounted for more than one landholder.

During the 2011 field season, wildlife and range surveys were initiated and completed on approximately 17,908 acres under the MULTISAR HCS program. As a result of the 2011 surveys, many significant sightings were recorded (Table 4). Through the MULTISAR HCS program, over 34,690 wildlife sightings (of which approximately 4,390 were from 2011) have been submitted into FWMIS since 2004.

Table 4. Species at risk recorded during the 2011 Habitat Conservation Strategy field season

Species	General Status[1]	Legislative Status[2]	Features	Significance
Ferruginous Hawk	At Risk	Endangered	4 active nests	Two nests were previously not recorded in FWMIS.
Burrowing Owl	At Risk	Endangered	3 separate locations showing signs of activity in 2011.	All locations are previously undocumented sites.
Baird's Sparrow	May be At Risk	N/A		
Short-eared Owl	May be At Risk	N/A		
Prairie Falcon	Sensitive	Special Concern	4 active nests	Not previously recorded in FWMIS for the property
Broad-winged hawk	Sensitive	N/A		Not previously recorded in FWMIS for the property
Sharp-tailed	Sensitive	N/A	2 active leks.	

Species	General Status[1]	Legislative Status[2]	Features	Significance
Grouse				
Swainson's Hawk	Sensitive	N/A	1 active nest	
Sprague's Pipit	Sensitive	Threatened		
Long-billed Curlew	Sensitive	Special Concern		
Loggerhead Shrike	Sensitive	Special Concern		
Golden Eagle	Sensitive	N/A		
Northern Harrier	Sensitive	N/A		
Turkey Vulture	Sensitive	N/A		
Brewer's Sparrow	Sensitive	N/A		
Grasshopper Sparrow	Sensitive	N/A		
Upland Sandpiper	Sensitive	N/A		
Sora	Sensitive	N/A		
Least Flycatcher	Sensitive	N/A		
Common Yellowthroat	Sensitive	N/A		Not previously recorded in FWMIS for the property
American White Pelican	Sensitive	N/A		Not previously recorded in FWMIS for the property
Barn Swallow	Sensitive	N/A		
Northern Pintail	Sensitive	N/A		
Lesser Scaup	Sensitive	N/A		
Green-winged teal	Sensitive	N/A		
White-winged scoter	Sensitive	N/A		Not previously recorded in FWMIS for the property
Black-necked stilt	Sensitive	N/A		Not previously recorded in FWMIS for the property
Horned Grebe	Sensitive	N/A		
Common Nighthawk	Sensitive	Threatened		
McCown's Longspur	Secure	Special Concern		
American Badger	Sensitive	Data deficient		
Pronghorn	Sensitive	N/A		

Species	General Status[1]	Legislative Status[2]	Features	Significance
Prairie Rattle Snake	Sensitive	Data deficient	Hibernaculum	Hibernaculum not previously documented in FWMIS
Wandering Garter Snake	Sensitive	N/A		
Plains Garter Snake	Sensitive	N/A	Hibernaculum	Hibernaculum not previously documented in FWMIS

[1]Alberta General Status (ASRD 2010b)
[2]Legislative Status for Canada's Species at Risk Act: (http://www.sararegistry.gc.ca) or Legislative Status Alberta Wildlife Act: (http://srd.alberta.ca/BioDiversityStewardship/SpeciesAtRisk/SpeciesSummaries/SpeciesAtRiskFactSheets.aspx
N/A = not assessed

3.4 2011-2012 Implementation of HCS Habitat Enhancements

Several habitat enhancements and management changes were facilitated through the MULTISAR HCS process. The following includes all new and continued enhancements for 2010-2011. Enhancements considered priority 1, 2, 3, or general are based on individual HCS reports and specific HCS team reviews. Since 2005 MULTISAR and HCS participants have completed 53habitat enhancements ranging from native reseeding to upland watering sites (Figure 1).

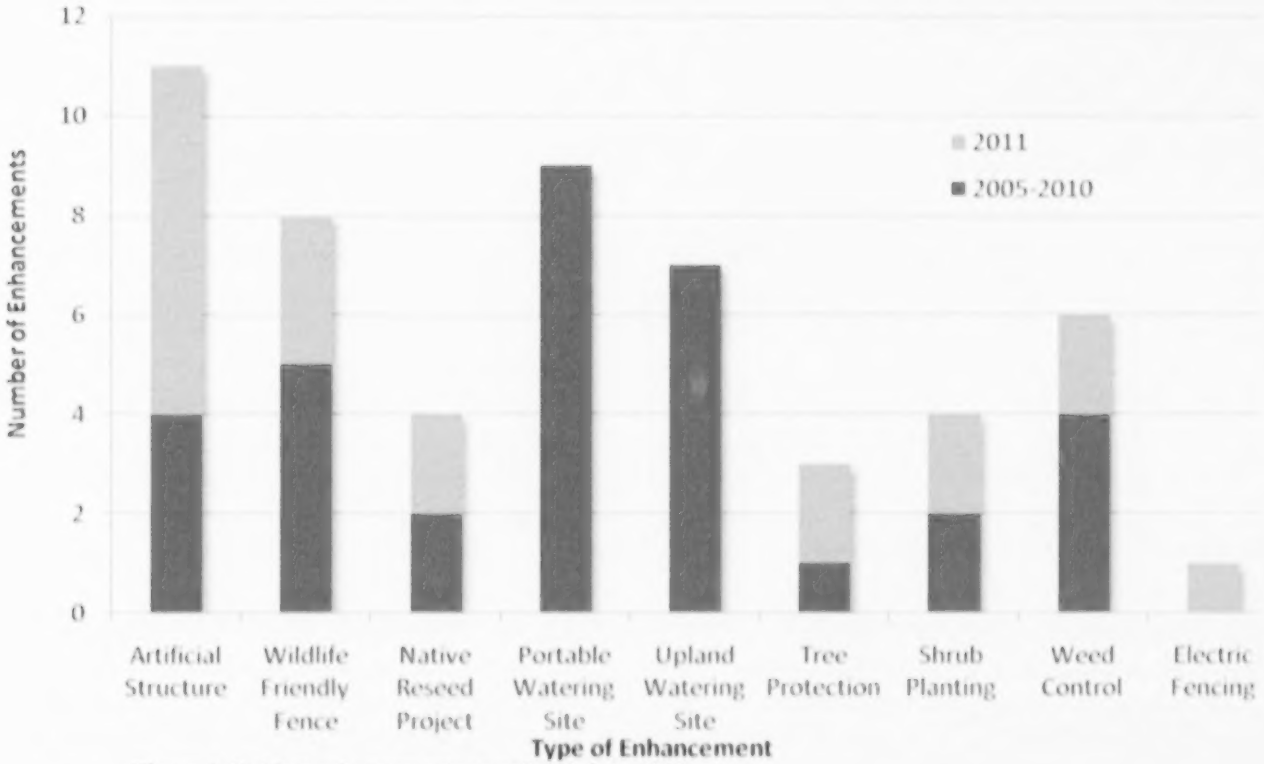

Figure 1. Habitat enhancements completed since 2005

Priority 1:

a. MULTISAR 2: Installment of a temporary electric fence to keep livestock out of a native reseed was completed. This will help to minimize grazing and tramping impacts to the sensitive area.

b. MULTISAR 7: Installed approximately 2000 m of smooth wire to an existing fence to increase the permeability of the fence to pronghorn and other large wildlife.

c. MULTISAR 7 and 18: Reseeded 680 acres of cultivated land back to native grass species (200acres on MULTISAR 7 and 480 acres on MULTISAR 18). This will provide more grazing opportunity for local ranchers and also provide habitat to a variety of grassland dominant wildlife species.

d. MULTISAR 4 and 7: Fenced off a lone cottonwood tree in areas with historic ferruginous hawk nests to protect them from cattle damage. This fencing still allows use of the tree's shade for cattle.

e. MULTISAR 9: Testing of the aquifer will occur at the end of February to determine whether or not a temporary water licence can be issued.

Priority 2:

a. MULTISAR 4: Planted fifty native chokecherry (*Prunusvirginiana*) and thirty thorny buffaloberryshrubs to enhance shrubby areas for loggerhead shrikes on one HCS property.

b. MULTISAR 13: Planted fifty native chokecherry (*Prunusvirginiana*), seventy thorny buffaloberry, and 400 silver sagebrush plugs to provide habitat for local wildlife and enhance a native reseeding project.

General Recommendations:

a. MULTISAR 8 and 11: Weed control of Canada thistle (*Cirsiumarvense*), hound's tongue (*Cynoglossumofficinale*), bull thistle (*Cirsiumvulgare*), spotted knapweed (*Centaureamaculosa*), leafy spurge (*Euphorbia esula*), and tall buttercup (*Ranunculus acris*). MULTISAR purchased and delivered to one HCS participant a post-emergence broadleaf herbicide called Restore™ and organized the use of a bio-control targeting leafy spurge on another HCS participating property.

b. MULTISAR 5, 7, and 10: Wildlife friendly fencing was completed on three HCS properties. Fencing was also completed bythe Alberta Fish and Game Association in collaborations with ACA's Pronghorn project on several HCS properties (see Table 5 for accomplishments).

c. MULTISAR 8: Three artificial structures with nesting platforms were installed to create potential nesting sites for raptors, with focus on attracting ferruginous hawks, which will help to control ground squirrel numbers.

d. MULTISAR 9 and 13: Installation of four bat boxes(two at each HCS property) in order to attract bats and provide roosting habitat for bats on the properties.

Table 5.Wildlife friendly fencing completed in 2011-2012 by Alberta Fish and Game Association on participating HCS properties

Task Completed	Total Length of Fencing (km)
Installation of double stranded smooth wire	> 10
Removal of paige wire	>2

3.5 Conclusion

MULTISAR has increasingly become more recognized and its HCS work has grown tremendously throughout the St Mary's River, Pakowki Lake and Milk River basins. MULTISAR has developed plans for approximately256,729 acres of land, of which a large portion is interconnected, allowing for landscape planning versus single property initiatives. MULTISAR HCSs will continue to be the cornerstone of the MULTISAR project with efforts made to increase the land base we work within our priority areas and "connect" additional properties adjacent to participating HCS landholders. MULTISAR has and will continue to provide open communication, information and awareness, team based wildlife habitat planning, and will continue to build long-term relationships with landholders, government, non-government organizations, and industry.

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4.0 SPECIES AT RISK CONSERVATION PLANS

4.1 Introduction

Species at Risk Conservation (SARC) Plans were introduced in 2007 as an extension of the MULTISAR Habitat Conservation Strategy (HCS). HCSs have been developed to conserve species at risk habitat at the landscape level, but are resource-demanding and therefore, are most effective on a limited number of ranches in priority species at risk areas. However, at the scale of the entire Grassland Natural Region (GNR), a faster and more condensed process that applies the principles of HCSs, but on a larger number of holdings, needed to be developed. Initially, the SARC Plan process was evaluated in two high value areas for multiple species at risk; the Hanna region and the MilkRiver Basin (See Downey*et al.* 2008). The landholders' satisfaction with the SARC Plan assessment in these areas has led to the continuation of the program and the expansion into additional key multi-species at risk areas identified within and adjacent to the GNR, including the Rocky Mountain and Parkland Natural Regions, and the South Saskatchewan River Sub-basin. SARC Plans are also delivered in the GNR by Operation Grassland Community (OGC), a program of the Alberta Fish and Game Association.

The goal of the SARC Plan is to provide landholders with the appropriate tools and knowledge to make subtle management changes to their operation to benefit species at risk and other wildlife, based on a visual assessment of the key wildlife habitats found on their ranch. The objectives of the SARC Plan are:

1. Use the knowledge learned from the implementation and monitoring of HCSs to support the Beneficial Management Practice (BMP) recommendations provided to ranches across the entire GNR of Alberta.
2. Recommend and assist landholders with implementing appropriate BMPs for key species at risk or other wildlife habitats.
3. Track awareness and perceptions of species at risk.
4. Track management changes and results.

4.2 SARC Plan Process

The MULTISAR SARC Plan process is divided into 6 steps; 1) identification of priority lands, 2) landholder contact 3) preliminary background research, 4) on-site habitat assessment, 5) SARC Plan development and delivery, and 6) follow up. For a complete account of the SARC Plan process, please refer to the 2010-2011 MULTISAR Progress Report (Rumbolt*et al.* 2011).

4.3 Achievements

Since the inception of the SARC Plan program in 2007, 72 assessments (11 in 2011-2012) have been completed throughout the GNR covering a total area of 146,956 acres (7957 acres in 2011-2012). One additional landowner signed up for a plan this year but, due to poor weather, staff were unable to complete the field assessment and will attempt to complete the plan in the spring of 2012.

For the 11 SARC Plans (7957 acres) completed by MULTISAR this year, BMPs were recommended for the following species and groups of species:

1. Grassland Birds – 11 (6305 acres)*
2. Amphibians – 9 (4225 acres)
3. Raptors – 8 (4905 acres)
4. Sharp-tailed grouse – 4 (4997 acres)

* BMP recommendations for species/groups of species are not mutually exclusive.

In June of 2011, MULTISAR visited the site where a portable watering was installed as part of a cost sharing agreement with one of its SARC Plan cooperators. The unit is used on Margaret Lakes, which is a shallow lake that is known to have historically hosted breeding trumpeter swans. It was determined that a watering unit at this location may help alleviate the pressure on the lake from cattle, thereby increasing shoreline health and water quality, and reducing disturbance to trumpeter swans using the lake. MULTISAR visited the site to document the presence/absence of trumpeter swans on the lake, however, no swans were observed on the lake in 2011. This site was also used later in the summer as a demonstration site for a group of local ranchers and stewardship groups to show how stewardship activities can have positive results for both wildlife and cattle operations.

Several habitat improvements that were developed as demonstration sites on SARC Plan cooperator properties were monitored this year and will continue to be monitored on a regular basis to ensure that they achieve their objectives. Habitat improvements monitored included nesting platform erected for ferruginous hawks and both wetland and riparian fencing projects. Monitoring of these sites involves taking photos of the improvement and surrounding area from predetermined locations in order to detect any wildlife use and habitat changes that may have occurred from year to year. Notes were also taken to complement the photos. Yearly discussions with the landowners will help determine the success of these improvements, not only in creating and maintaining wildlife habitat, but additionally, in how they may have impacted cattle operations, either positively or negatively.

Through the SARC Plan Program, MULTISAR has been evaluating landholders' awareness, use of BMPs and perceptions towards species at risk using a standardized

questionnaire. Of the 10 SARC Plans, 7 questionnaires[2] were completed in 2011-2012 and results were similar to those in previous years in that perceptions towards species at risk were largely positive. However, these questionnaires were only given to landholders who agreed to participate in the SARC Plan program and might have already been positively biased toward species at risk. Therefore, they may not be representative of the views of all landholders in the GNR. Tables in Appendix A summarize the answers to key questions on the questionnaire from 2011-2012 participants. Results show the perceptions and awareness of landholders towards species at risk. A little over half of the respondents (57%) believed that wildlife are beneficial to their operation, while 29% were unsure if wildlife were in any way beneficial. All landholders (100%) thought that their land was important for species at risk and other wildlife, and a large proportion (86%) were able to list some of the species at risk their ranch provided habitat for. Although most respondents (71%) were unsure if species at risk legislation, such as the Alberta Wildlife Act and Species at Risk Act, is a benefit or detriment to them and their operation, most (86%) agreed that species at risk should be protected by law. The results of the survey also showed that most participants (86%) believed that they were already making adjustments in their operation for species at risk.

Most landholders are already using important BMPs such as maintaining native prairie and using rotational grazing. However, there are still many important practices that are not often used, such as fall seeding crops and delaying fieldwork until wildlife have finished nesting. Possible reasons for the limited use of these practices may be due to a lack of awareness on the part of the landholder or the belief that many of these BMPs have an undesirable cost or inconvenience associated with implementing them.

A follow up questionnaire was developed in 2010 and will be given approximately 2 years after the completion of a SARC Plan to monitor if and how SARC Plans are improving perceptions and awareness of species at risk and adoption of BMPs.

4.4 Conclusion

Since their inception in 2007, interest in SARC plans has continuously grown among landholders. In the first few years of the program, landowners previously known to staff were approached. Word of mouth between neighboring landowners as well as the work of the extension program helped to engage even more landowners. MULTISAR staff are experimenting with various approaches to find the most efficient method by which to engage landowners in the program. In 2011-2012 approximately 42% of landholders who agreed to have SARC Plan assessments completed were the result of referrals from Alberta Sustainable Resource Development (ASRD) and Alberta Conservation Association (ACA) staff. Twenty-five (25%) of the landowners contacted us after hearing about the program. Presentations given by MULTISAR staff and landowner referrals

[2] Three questionnaires were not completed in 2011 for several reasons including. One landowner had two properties assessed and thus only one questionnaire was needed while another two landowners declined to complete the survey due to timing constraints. In addition, one SARC Plan was completed on new lands purchased by a cooperating landowner who had completed the questionnaire in the previous year.

made up another 33% of cooperating landowners. Most of these landowners did not previously know about the program but were more than happy to take part.

Myths surrounding species at risk and the loss of land or management control to the government are still common views after discussions with landowners. Some landholders are still apprehensive about the program and sharing information on species at risk with the government, fearing loss of control of their land. These fears seem to be more prevalent in areas where MULTISAR has been less involved. Many claim that they have known somebody who has lost control of their property due to having species at risk on their land. MULTISAR hopes to continue to dispel myths surrounding species at risk by continuing to build and maintain relationships with individuals in hopes that the word will spread between landholders. MULTISAR hopes to continue to partner with other organizations, such as OGC, in the development and delivery of SARC Plans. It is hoped that partnerships such as this one will increase the capacity of MULTISAR to engage landholders and achieve greater awareness of species at risk and their conservation, especially in areas where the partnering organization may be well known and trusted.

This past year showed a sharp decrease in the number of landowners who signed up for the program. The majority of these were referred to MULTISAR by staff from partnering organizations or from landowners we had previously worked with. It appears that the pool of potentially interested landowners that are known to staff is slowly drying up. MULTISAR needs to focus on attracting attention from landowners who are isolated from the program. These landowners are those that don't have relationships with partnering staff or with other cooperating landowners. One method that MULTISAR will try in early 2012 is to mail out information sheets to rural locations within one of our priority areas. These sheets will talk about the MULTISAR program with focus on SARC Plans. This mail out is expected to reach approximately 1000 homes. If response is low, MULTISAR may try another round of mail outs to the same households later in the year. If response is positive, MULTISAR may send out the same information sheets to a separate block of rural households in another priority area.

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5.0 HCS EVALUATION AND MONITORING PROGRAM

5.1 Introduction

Conservation groups continue to face the challenge of demonstrating to stakeholders that projects are accomplishing their objectives and goals. Without effective evaluations or monitoring there is no way of measuring the effects of the project (Margoluis and Salafsky 1998). To establish a sound monitoring program for your project, many questions need to be asked. What should be evaluated and why is it important? How and where should the evaluation and/or monitoring be conducted? What kind of costs and time constraints will be associated with this work (Johnson 2000)? An effective evaluation and monitoring plan identifies stakeholders, strategies to collect data, indicators that will be measured, and a timeline as to how, when, and by whom the data will be collected (Margoluis and Salafsky 1998). The design of the evaluation/monitoring program should focus around the objectives with the highest priority or concern (Johnson 2000).

The following sections will provide a brief synopsis of MULTISAR's Evaluation and Monitoring protocols for the Habitat Conservation Strategy (HCS) component of the MULTISAR project. In addition, details on the statistical analysis of the existing data collected as well as recommendations for future monitoring data collection mitigations will be discussed.

5.2 Evaluation of the HCS component of the MULTISAR Project

It was determined that an evaluation of each HCS completed for the MULTISAR project was to occur five years after its initiation (Downey *et al.* 2011). The main focus of this evaluation was to measure how effective the HCS plans were in influencing habitat management, habitat value for species at risk and landholders' perceptions of species at risk (Downey *et al.* 2011). In the spring and summer of 2011, the first HCS property was re-evaluated (hereafter referred to as MULTISAR_1 or MP_1).

5.2.1 Evaluation Process for 2011

Each HCS is to be evaluated on three levels: range health, riparian health (when applicable), wildlife Best Management Practices (BMP), and landholders' perspectives (Downey *et al.* 2011). In 2011 the range health (RH) on MULTISAR_1 was evaluated by completing range health assessments and Robel pole measurements at historic range health transect locations ensuring at least one assessment was completed in each management unit. Due to the vastness of this property, no detailed transects were completed. Final sample sizes after removing all assessments and Robel pole measurements with discrepancies were 95 and 91 respectively. Results found were then compared to the objectives in the HCS: "maintain" (n = 73 RH; n = 69 Robel),

"increase" (n = 17 RH + Robel) or "decrease" (n = 5 RH + Robel) in range health to attain specific wildlife and cattle operation desired effects.

Riparian health was reassessed by the Alberta Riparian Habitat Management Society (hereafter Cows and Fish). Cows and Fish re-examined 8 historic riparian polygons along the Milk River using current parameters and methodologies.

MULTISAR 1's landholder was asked to participate in a questionnaire to document changes (positive or negative) in attitudes, and knowledge of species at risk and range management. The questionnaire also queried the opinion of the partnership with MULTISAR and whether they have experienced a benefit from the collaboration.

Due to the nature of the methodologies used to capture wildlife information for MULTISAR's first HCS property, this first re-evaluation was performed differently than intended for the overall evaluation of the project. In the baseline years, the main wildlife surveys were conducted primarily along road transects. Simple comparisons were made to reflect the changes from baseline year to evaluation year. In 2011, multi-species point count data was collected more extensively on MULTISAR 1. This data will be useful for comparison at the next 5 year re-evaluation.

Achievement of project goals was measured based on the following: desired range and riparian health is occurring, desired wildlife species are occurring or increasing on the site, recommendations in the HCSs are being followed, enhancements are having the desired effect, and MULTISAR is increasing awareness and knowledge about species at risk and is found to be beneficial to the ranching community.

5.2.2 Evaluation Results for 2011

5.2.2.1 Range

Our first HCS property, MULTISAR 1, to be re-evaluated five years after the start of implementation had enlightening results. Upon comparing the 73 range health assessments associated with "maintaining" range health, it was determined that there was a significant difference between the range health scores from the baseline years and evaluation year. Range health mean for baseline years was 85.22% with evaluation year mean decreasing to 69.75%. Similarly, Robel measurement averages were significantly different from baseline years to evaluation year and that height and the density averages seemed to have decreased rather than remain the same.

In a similar fashion, mean range health assessment score for the baseline years of transects desired to "increase" in range health were 69.80% and evaluation year mean being 64.41%. This was not the desired difference sought after because the means have decreased rather than increased. Range health means were not significantly different when examining them for a negative 10% variance, meaning they have not decreased considerably and are rather considered to have maintained the same health rating from baseline year to evaluation year. The seventeen visual obstruction mean measurements

(Robel) of the vegetation from baseline years compared to the evaluation year were not significantly different but density averages have decreased since baseline years.

In addition, the five locations on the MULTISAR 1 property determined to require a "decrease" in range health to achieve desired habitat criteria for specific wildlife priorities or management recommendations described in the HCS report did actually decrease in health (baseline years $\bar{x}$ = 69.20% and evaluation year $\bar{x}$ = 63.80%) However, based on statistical results there is not a large enough decrease in range health to return significance.

At these same five locations, Robel pole measurements of the vegetation from baseline years compared to the evaluation year were not significantly different from one another to conclude that the height and the density averages of the vegetation has decreased since baseline years.

5.2.2.2 Riparian

Eight riparian health assessments were compared based on their health rating percentages from baseline year to evaluation year. It was determined that there was a slight negative shift in health for all of these transects except for one. In the baseline year, health scores were lowered due to lack of tree regeneration (cottonwood and other), physical alterations to the site (loss of root mass protection, and other alterations to the banks), and presence of invasive species, disturbance increaser woody species, and undesirable wood species. In 2011, the predominant reasons for score degradation included high browse pressure on preferred woody species, lack of or little cottonwood regeneration, physical alterations to the site (bank erosion from loss of deep binding root mass protection, livestock water access points, trails, etc.), presence of invasive (canopy cover and distribution), and dewatering of the system.

The mean health score from 1998 was 65.75% ("Healthy but with problems"; ranging from 42-78%) compared to 62.50% ("Healthy but with problems", ranging from 51 to 70%) in 2011 with none of the polygons changing range health categories.

5.2.2.3 Questionnaire

Overall, the results of the questionnaire completed for MULTISAR 1 was very positive. The landholder valued the friendly and collaborative work that MULTISAR provided. The landholder has had an increased appreciation for species at risk and beneficial management practices and has learnt more about soils, grass growth, and grazing management. MULTISAR 1 was and is still willing to complete projects that help benefit cattle operations as well as wildlife. The landholder liked the idea of having evidence through completing an HCS that he is making an effort towards due diligence for species at risk protection but he still has reservations about what the federal government can enact. The most substantial finding was the assurance of the landholder to willingly work with MULTISAR for another 5 years.

5.2.2.4 Wildlife

Several wildlife surveys from the baseline years on MULTISAR 1 were repeated in 2011. For this report focus will be on three point count survey routes (Green, Purple, and Red route). Species richness and species diversity were evaluated from baseline year to assessment year for all three routes.

The Green route species richness per stop has decreased in the evaluation year ($\bar{x}$ = 5) but was not significantly different from the baseline year ($\bar{x}$ = 7.2). Species diversity however has decreased significantly from baseline year ($\bar{x}$ = 1.72) to evaluation year ($\bar{x}$ = 1.22). In the baseline year species seen the most frequently included chestnut-collared longspur (*Calcariusornatus)*, horned lark (*Eremophilaalpestris)*, Sprague's pipit (*Anthusspragueii*), Baird's sparrow (*Ammodramusbairdii*) and the western meadowlark (*Sturnellaneglecta*). Based on the guilds of species found in 2011, more wetland associated species were recorded than in the baseline year and the most common species recorded were chestnut-collared longspur, horned lark, western meadowlark, red-winged blackbird (*Agelaiusphoeniceus*), and the boreal chorus frog (*Pseudacrismaculata)*. No management changes were recommended for this pasture in the first HCS.

Species richness per stop for the Purple route for the evaluation year ($\bar{x}$ = 7.9) has increased and was very near to being statistically different from the baseline year ($\bar{x}$ = 6.4). However when looking at the diversity of species, there was no significant difference among baseline ($\bar{x}$ = 1.53) and evaluation years ($\bar{x}$ = 1.64) but there has been an increase. Refer to Table 6 for the most common species observed in each year. Recommendations for the pastures associated with this multi-species route included areas desiring an increase and/or maintenance of range health as well as areas decreased in range health to attain specific habitat functions for livestock and wildlife species.

Table 6. Most common species found on the Purple route

Baseline year	Evaluation year
Chestnut-collared longspur	Boreal chorus frog
Horned lark	Chestnut-collared longspur
Long-billed curlew (*Numeniusamericanus*)	Horned lark
Savannah sparrow (*Passerculussandwichensis)*	Pronghorn (Antilocapra Americana)
Sprague's pipit	Richardson's ground squirrel (*Urocitellusrichardsonii*)
Western meadowlark	Savannah sparrow
	Sprague's pipit
	Vesper sparrow (*Pooecetesgramineus*)
	Western meadowlark

Red route species richness from the evaluation year ($\bar{x}$ = 5.4) was not statistically different from the baseline year ($\bar{x}$ = 4.7). As well as, there was no significant difference between baseline ($\bar{x}$ = 1.19) and evaluation years ($\bar{x}$ = 1.37) when looking at species diversity. Refer to Table 7 for the most common species observed in each year. Desired effects of management recommendations for the pastures associated with this route include areas increasing and maintaining range health.

Table 7.Most common species found on the Red route

Baseline year	Evaluation year
Baird's sparrow	Baird's sparrow
Horned lark	Chestnut-collard longspur
Pronghorn	Grasshopper sparrow (*Ammodramussavannarum*)
Savannah sparrow	Horned lark
Sprague's pipit	Savannah sparrow
Vesper sparrow	Sprague's pipit
Western meadowlark	Western meadowlark

In the Green and Purple routes it was noted that species composition at each stop for each year to be quite varied and in particular more wetland associated species were found in 2011. The Red route results had less variation between species composition and had fewer wetland associated species.

5.2.3 Conclusion

With 2011 being the first year to re-assess an HCS, much has been learnt. For the MULTISAR_1 property, it was determined that range health has generally decreased and that wildlife species recorded has somewhat shifted towards species that prefer ephemeral areas or wetlands. These changes may be due to precipitation levels received over the last few years and possibly cattle herd size. In the forthcoming years, based on knowledge acquired through this re-evaluation process, modifications will be made to allow for improved assessment of HCSs and their recommendations and desired outcomes for each property.

5.3Monitoring Habitat Enhancements

Based on recommendations founds within HCS reports, enhancements have been applied on several properties. Monitoring of these habitat enhancements allows MULTISAR staff to measure whether enhancements are having the desired effect, and what changes may be necessary to ensure the desired effects are achieved.

Monitoring is the periodic collection of data to determine if activities are accomplishing the project goals and objectives. Monitoring enhancements can help aid in the evaluation

process (Margoluis and Salafsky 1998). Problems and corrective actions identified during monitoring can help mainstream future enhancements and or monitoring protocols. However, determining the success of an enhancement can be a complex question since the habitat manipulation (enhancement) can cause varied effects and effects may at times may not be linked to the manipulation (Fletcher *et al.* 2007). The following will be a description of the current MULTISAR monitoring program and recommendations to improve its scientific basis and soundness to better link enhancement effect on species at risk habitat. In 2011, MULTISAR monitored 13 distinct enhancement projects that were implemented on10 different properties as a result of HCS recommendations.

5.3.1 Restoration Projects

Conversion of cropland back to native grasses can benefit a suite of species at risk. Monitoring of enhancements projects that involve native grass reseeding will be completed every year, and up to five years post application, as considerable time and money are spent on these types of projects. For detailed objectives and desired measures of success for MULTISAR restoration projects see Downey *et al.* 2011 Section 5.3.1. Monitoring at two MULTISAR reseeding projects was conducted in 2011, the results of which are summarized in Table 8. Based on the outcomes of range and wildlife data collected for the oldest reseeding project (MULTISAR_7), it appears that the habitat is evolving into what was sought after. There is a shift in grass and forb species dominance towards a restored native habitat and coinciding increased wildlife diversity.

Two new reseeding projects (MULTISAR_7 B and MULTISAR_18) were implemented in 2011-2012 with monitoring to begin in the spring of 2012.

Table 8.Native Prairie restoration project monitoring

Site	Date reseeded	Target Species	Baseline 2008		2011Assessment		Wildlife Species Transition		
			Dominant Grass and Forb Species Present	%	Dominant Grass and Forb Species Present	%	Baseline year 2007	2009	2011
MP_7	April 2008	Grassland Birds	Western/Northern Wheatgrass (*Agropyronsmithii/ dasystachum*)	9.6	Northern Wheatgrass	11.4	Horned lark McCown's longspur (*Rhynchophanesmccownii*) Wilkt	Baird's sparrow Boreal chorus frog Horned lark Red-winged blackbird Vesper sparrow Western meadowlark Wilson's phalarope (*Phalaropus tricolor*)	American coot (*Fulica Americana*) Baird's sparrow Boreal chorus frog Blue-winged teal (*Anasdiscors*) Grasshopper sparrow Green-winged teal (*Anascarolinensis*) Horned lark Marbled godwit (*Limosafedoa*) Northern shoveler Savannah sparrow Sprague's pipit Vesper sparrow Wilket (*Tringascutulata*) Wilson's phalarope
					*Yellow Sweet Clover (*Melilotusofficinalis*)	6.8			
			Blue Grama Grass (*Bouteloagracilis*)	4.0	Western Wheatgrass	6.7			
			June Grass (*Koeleriamacrantha*)	0.5	June Grass	4.8			
			Needle and Thread Grass (*Stipacomata*)	trace	Blue Grama Grass	3.1			
MP_2	May 2010	Grassland Birds + burrowing owl (*Athenecuncularia*)	**Baseline 2011**					**Baseline year 2010**	**2011**
			Dominant Grass and Forb Species Present	**%**				American crow (*Cornusbrachyrhynchos*) Horned lark Pronghorn Richardson's ground squirrel Vesper sparrow	Horned lark Northern harrier (*Circus cyaneus*) Richardson's ground squirrel and several burrows Savannah sparrow Vesper sparrow Western meadowlark
			Common dandelion (*Taraxacumofficinale*)	9.5					
			Blue Grama Grass	4.5					
			Wild Oats (*Avenafatua*)	1.5					
			Western Wheatgrass	1					

MP – MULTISAR participant aka MULTISAR 's

*Was found throughout adjacent lands as well as a result of the wet spring

5.3.2 Shelterbelt and Shrub Planting

Shelterbelts and shrub planting can increase nesting habitat for a variety of wildlife species such as ferruginous hawks (*Buteoregalis*) and loggerhead shrikes (*Laniusludovicianus*), and increase forage/winter habitat for sage grouse (*Centrocercusurophasianus*), sharp-tailed grouse (*Tympanuchusphasianellus*) and pronghorn (*Antilocapraamericana*). Shrubs will be monitored yearly for the first five years, to determine establishment and growth. SeeDowney *et al.* (2011) Section 5.3.2 for more detailed objectives and desired measures of success for shelterbelt and shrub planting.

MULTISAR planted shrubs in two new locations: MULTISAR_4 (Site B) and MULTISAR_13 properties in the spring of 2011 (

Table 9). Due to the high moisture levels which led to tall vegetative grass growth in 2011, planted shrubs were hard to detect. Most sites will be monitored in the spring of 2012 prior to new grass growth season.

Table 9.Shelterbelt and shrub monitoring

Enhancement Project	Target Species	Shrub Species Planted	# Shrubs Planted	Date Planted	Date Monitored	Latest Assessment		Desired Effects
						Survivability	Average Shrub Height	
MULTISAR_4 Site B	Loggerhead Shrike Grassland Birds	Chokecherry (*Prunusvirginianus*)	50	May 2011	First year post planting: Scheduled for spring of 2012	Unknown	Unknown	unknown
		Thorny Buffaloberry (*Sheperdiaargentea*)	30			Unknown	Unknown	
MULTISAR_4 Site A	Loggerhead Shrike Grassland Birds	Chokecherry	200	April 2010	Second year post planting: Scheduled for spring of 2012	Unknown	Unknown	unknown
		Thorny Buffaloberry	200			Unknown	Unknown	
MULTISAR_1 3	Sage Grouse, Pronghorn	Silver Sagebrush (*Artemesiacana*)	400	May 2011	July 2011	Could not find sagebrush within tall grasses	Unknown	unknown
		Chokecherry	50	May 2011	July 2011	0% but only 5 shrubs found	27cm	No but not enough data collected
		Thorny Buffaloberry	70	May 2011	July 2011	93%	36cm	Yes
MULTISAR_7	Sage Grouse, Pronghorn	Silver Sagebrush	148	May 2010	Second year post planting: Scheduled for spring of 2012	Unknown	Unknown	unknown

5.3.3 Artificial Nesting Structures

Artificial structures are used by MULTISAR in areas which have potential to support raptors at risk without negatively impacting other species at risk in the area. Artificial structures include raptor nest poles (Figure 2) and burrowing owl burrows. Refer to Section 5.3.3 of Downey *et al.* (2011) for objectives and desired measures of success for all of MULTISAR's artificial structures.

Two burrowing owl artificial burrows and two nest poles for ferruginous hawks were installed in November 2008 and December 2007, respectively. These structures were monitored in 2011; the results of which are summarized in Table 10. Three new nest poles were installed on MULTISAR_8 in February 2012. Monitoring of their use will begin in the summer of 2012.

Figure 2. Active ferruginous hawk nesting structure

Table 10. Artificial nesting structure monitoring

Enhancement Project	Enhancement	Target Species	Date Implemented	Evidence of Use	Species Using Structure	Desired Effect
MULTISAR_2	Two Burrowing Owl Burrows	Burrowing Owl	2008	N/A Entrance remains closed for weed spraying.	N/A	N/A
MULTISAR_5(a)	Nest Pole	Ferruginous Hawk	2007	Yes. Possible attempts at nesting. Evidence of perching on pole (whitewash on and around pole).	2 pairs of Swainson's Hawk (*Buteoswainsoni*) observed in the area	Yes
MULTISAR_5(b)	Nest Pole	Ferruginous Hawk	2007	Yes. Nest on platform with nest being much larger than from 2010 observations.	Ferruginous hawk adult pair and 3 young of the year (on the nest)	Yes

5.3.4 Wildlife Friendly Fence Lines

All fence lines constructed under the MULTISAR project will be wildlife friendly and will include a smooth double stranded bottom wire at least 18 inches off the ground and the top wire height at a maximum of 40 inches. Where deemed required, vinyl markers were also installed to help avoid avian collisions. Refer to Section 5.3.4 of Downey *et al.* (2011) for objectives and desired measures of success for all of MULTISAR's wildlife friendly fencing projects. Wildlife friendly fences were erected for three new locations in 2011-2012 and the monitoring results are summarized in Table 11. In addition, outside of the MULTISAR project, the AFGA (Alberta Fish and Game Association) completed 10 more kilometers of wildlife friendly fencing on MULTISAR_4 and MULTISAR_7. This work was considered in-kind and no monitoring will be completed for these 10km.

Table 11.Wildlife friendly fence line monitoring

Enhancement Property	Year Implemented	Target Species	Average Height of Bottom Wire (inches)	Average Height of Top Wire (inches)	Reflectors	Desired Effect
MULTISAR_7 Site B	2011	Pronghorn Greater Sage Grouse	To be measured in 2012	To be measured in 2012	Yes	Unknown
MULTISAR_10	2011	Grassland birds Western blue-flag (*Iris missouriensis*) Ferruginous hawk	To be measured in 2012	To be measured in 2012	No	Unknown
MULTISAR_5	2009	Pronghorn	18.4	53.1	No	Fenceline now completed in 2011 Yes
MULTISAR_7 Site A	2010	Pronghorn and Greater Sage Grouse	Has not been measured	Has not been measured	Yes	Unknown

5.3.5 Weed Control

Sites invaded by noxious and restricted weed species reduce health, as the invading species quickly replace the native vegetation, reducing diversity and productivity. Refer to Section 5.3.5 of Downey *et al.* (2011) for objectives, desired measures of success and monitoring time frames.

One new property implemented bio-control (insects) for leafy spurge and two properties were monitored for chemical control applications. Results of this monitoring are summarized in Table 12.

Table 12.Weed control monitoring

Enhancement Project	Date Implemented	2011			
		Species of Weed	Control Method	If Bio-Control used, are larvae present?	Desired Effect
MULTISAR_8	June 2011	Leafy Spurge (*Euphorbia esula*)	Bio-control/Spray	Unknown: area to be investigated in spring of 2012	unknown
MULTISAR_10	2010	Canada Thistle (*Cirsiumarvense*), Hound's Tongue (*Cynoglossumofficinale*), Spotted Knapweed (*Centaureabiebersteinii*), and Tall Buttercup (*Ranunculus acris*)	Restore herbicide To begin use in spring of 2012	N/A	N/A Landholder has not started to use provided herbicide.
MULTISAR_11	2010	Canada Thistle, Hound's Tongue, and Downy Brome (*Bromustectorum*)	Restore herbicide	N/A	Yes Landholder found good control of Canada thistle, hound's-tongue, and burdock
MULTISAR_9	June 2009	Dalmatian Toadflax (*Linariadalmatica*)	Bio-control/Spray	Unknown-not monitored in 2011	Yes in 2010 but unknown for 2011

5.3.6 Watering Systems

Water improvement monitoring will occur at two levels depending on the scale of impact.

A) Portable Watering Units
Portable Watering Units are usually purchased through MULTISAR to help reduce impacts to wetlands/riparian areas and to better distribute cattle throughout the pasture. Portable watering units can attract cattle away from wetlands/riparian areas thereby improving wildlife habitat by increasing emergent vegetation, reducing erosion of the slopes and shoreline by cattle, and increasing the longevity of wetlands/riparian areas.

B) Watering Sites (Uplands)
Upland watering sites are utilized to attract cattle into an area which is seldom used, in order to create heavier grazing pressure to benefit targeted species. Upland watering sites can also help decrease impacts on other wetlands and riparian areas in the same pasture.

Refer to Section 5.3.6 of Downey *et al.* (2011) for objectives, desired measures of success, and monitoring time frames for portable watering units and upland watering sites. In 2011, based on pre-determined monitoring time frames, only wildlife surveys were conducted at upland watering sites, the results of which are summarized in Table

13. Vegetative surveys for emergent vegetation, range health and Robel pole measurements for upland watering sites and/or portable watering unit sites will be monitored again in 2012.

Table 13.Upland watering site enhancement wildlife monitoring

Enhancement Site	Target Species	Date Implemented	Latest Wildlife Survey	Point count wildlife species observed	Desired Effect
MULTISAR_5(a)	Burrowing Owl	2008	2011	Horned lark Golden eagle (on periphery) (*Aquila chrysaetos*) Richardson's ground squirrel	More information required
MULTISAR_5(b)	Burrowing Owl	2008	2011	Horned lark Richardson's ground squirrel Savannah sparrow Western meadowlark	
MULTISAR_5(c)	Burrowing Owl	2008	2011	Horned lark Richardson's ground squirrel Savannah sparrow	
MULTISAR_1	Burrowing Owl Prairie Rattlesnake (*Crotalusviridisviridis*) Loggerhead Shrike	2010	2011	Horned lark Northern harrier Richardson's ground squirrel Savannah sparrow Sprague's pipit	
MULTISAR_8	Burrowing Owl Grassland Birds Northern Leopard Frog	2010	2011	Brewer's blackbird (*Euphaguscyanocephalus*) Savannah sparrow Vesper sparrow Western meadowlark (on periphery)	
MULTISAR_9 (a)+(b)	Ferruginous Hawk Grassland Birds (deferred grazing) EastslopeSculpin (*Cottus sp.*)	2010	N/A Not in use yet	N/A	

5.3.7 Tree and Shrub Protection

Trees and shrubs which have been or have the potential to be heavily impacted by cattle are generally recommended to have fence lines or corral panels placed around them to help prevent their gradual destruction and subsequent loss. Trees, especially lone cottonwood trees, in pastures that can be used as nesting sites by ferruginous hawks should also be protected. Sites in which the landholder implements the recommendations will be monitored every three years with photos taken to document the reduced impact of cattle on trees or shrubs. Raptors observed using the site will also be documented. In 2011 one treed area on MULTISAR_7, one on MULTISAR_4, and one on

MULTISAR_23 were protected from cattle damage, and are slated to be monitored in 2012. The first protected area on MULTISAR_4 will not be monitored again until 2013.

5.4 Future Direction

In 2012-2013 MULTISAR will continue to monitor enhancement projects to determine if desired effects are occurring. Forty three enhancement projects have been identified for monitoring in 2012-2013 (Table 14).

Table 14.Monitoring of enhancement projects in 2012

Enhancement Type	Property	Monitoring Year/Comment
Restoration Project	MULTISAR_7 Site A + B	2012 Yearly monitoring for range and wildlife
	MULTISAR_2	
	MULTISAR_18	
Shelterbelt and Shrub planting	MULTISAR_4 Site A +B	2012 Yearly monitoring
	MULTISAR_7	
Artificial Structures	MULTISAR_2 Site A	Evaluation year
	MULTISAR_2 Site B	2012 Yearly monitoring until used by target wildlife species
	MULTISAR_5 Site A + B	
	MULTISAR_8 Site A+B +C	
	MULTISAR_13 Site A+B	
	MULTISAR_9 Site A +B	
Wildlife Friendly Fencing	MULTISAR_7 Site B +C	2012
	MULTISAR_10	
	MULTISAR_13	
Weed Control	MULTISAR_9	2012
	MULTISAR_8	
	MULTISAR_10	
	MULTISAR_11	
Portable Watering Sites	MULTISAR_1 Site A+B	2012 Monitor every 2 years
	MULTISAR_5 Site A+B	
	MULTISAR_4 Site A,B,C,D	
	MULTISAR_8	
Upland Watering Sites	MULTISAR_1	2012 Monitor every 2 years for range and annually for wildlife
	MULTISAR_8	
	MULTISAR_5 Site A,B,C	
Tree and Shrub protection	MULTISAR_7	2012 initial and then 2014
	MULTISAR_4 Site B	
	MULTISAR_23	
	MULTISAR_4 Site A	2013

In 2012-2013 MULTISAR will also focus on how it is monitoring its enhancement projects and how to properly set up experimental design scenarios to systematically

determine whether a treatment (enhancement) is actually creating the observed effect on the landscape. Such strategies as the BACI design (Before-After-Control-Impact) will be utilized to build habitat representations before and after treatments as well as look at control and reference sites. The BACI design is favored over before and after comparisons because the effect found may not be due to implemented enhancements but rather to some temporal change such as moisture levels (Schwarz 2010).

5.5 Literature Cited

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6.0 FUTURE DIRECTION: 2012-2013

In 2012-2013, MULTISAR will work to achieve its goals and objectives under the 2009-2014 Business Plan in its three core programs areas:

1. Habitat Conservation Program:

   1.1. Seek interested landholders in priority species at risk areas and complete 3-5 habitat conservation strategies (~10,500 ac) with their cooperation and with the Alberta Lands and Fish and Wildlife Divisions, and the Alberta Conservation Association. This includes detailed vegetation and wildlife inventories, as well as range and riparian health assessments to identify habitats, priority species and the ecological condition of the rangeland and riparian areas.

   1.2. For those species at risk detected during inventories, use MULTISAR as the tool to implement recovery actions identified in provincial and national recovery plans.

   1.3. Secure habitat for species at risk through signed stewardship commitment agreements.

   1.4. Assist 3-4 HCS landholders, based on priority, in implementing habitat enhancement recommendations outlined in completed Habitat Conservation Strategies.

   1.5. Seek interested landholders, conduct pre-assessment interview and research, carry out rapid habitat assessment, and complete and deliver 10-20 new Species At Risk Conservation Plans.

2. Education, Outreach and Awareness Program:

   2.1. Work with watershed and other conservation groups to deliver the MULTISAR message and use every opportunity to promote the project and distribute relevant information to target audiences.

   2.2. Deliver 3-5 formal presentations at conferences, workshops, or similar events.

   2.3. Give 5-10 presentations at landholder orientated events to promote the MULTISAR message, as well as the Habitat Conservation Program.

   2.4. Assemble information and images, write and distribute 2 issues of the Grassland Gazette, MULTISAR's newsletter.

   2.5. Update and reprint 3-5 brochures or fact sheets on species at risk and beneficial management practices as needed.

   2.6. Regularly update MULTISAR's web site and ensure relevancy and accuracy of posted information.

3. Provide technical and logistical support to the 2013 Prairie Conservation Endangered Species Conference Planning Committee. Research, Monitoring and Data Management Program:

3.1. Participate in the annual monitoring of the Ferruginous Hawk throughout it range in collaboration with SRD.

3.2. Assist SRD in conducting greater sage grouse and sharp-tailed grouse monitoring on leks of southeastern Alberta.

3.3. Monitor the loggerhead shrike on two routes in southern Alberta.

3.4. Monitor amphibians on up to 10 road transects if temperatures and precipitation allow for the great plains toad and the plains spadefoot to emerge and reproduce.

3.5. Work with an academic institution to assess the relationship between wildlife species occurrence, wildlife species diversity, relative abundance, plant community type, and range health at the soil polygon level.

3.6. Evaluate one property (27,371 acres)originally assessed in 2006-2007 to measure how effective the HCS plan was at influencing habitat management, habitat value for species at risk and landholders' perceptions of species at risk.

3.7. Monitor habitat enhancement projects from up to 22 habitat conservation strategies (43 enhancement sites) developed in the Milk River, St. Mary River and Pakowki Lake basins since 2002.

3.8. Monitor changes in attitude toward species at risk and adoption of Beneficial Management Practices for species at risk in SARC Plan participants through an interview 2 years after each plan is completed.

3.9. Re-prioritize the Grassland Natural Region for species at risk conservation efforts using the improved habitat models based on the new Grassland Vegetation Inventory biophysical database.

3.10. Manage and store all data, images, and GIS layers collected or developed throughout the year at appropriate data repository locations for increased security and improved access by MULTISAR personnel.

APPENDIX A .Summary of the answers to key questions on the SARC Plan questionnaire from 2011-2012 participants

Landholder Knowledge and Attitudes Towards Wildlife and Species At Risk

Percent of Landholders* (%)	Response to MULTISAR SARC Plan Questionnaire
57	Wildlife beneficial to operation; 29% said that they were unsure as to how or if wildlife benefited their operation; 14% declined to answer.
100	Their land is important for SAR/wildlife habitat
86	SAR should be protected by law
86	Aware of SAR legislation
29	Legislation has impacts to their operation
86	Currently make adjustments for SAR/wildlife
86	Willing to make changes in management if doesn't affect their bottom line; 14% said maybe.
86	Have some idea of SAR habitat they may be able to provide

*Questionnaire Results based on 19 questionnaires.

Beneficial Management Practices Currently Used by Landowners Prior to the Completion of a SARC Plan

Percent of Landholders (%)	Beneficial Management Practice
100	Maintaining native prairie
86	Rotational grazing if appropriate
86	Resting pastures after use to restore forage
14	Delaying field work with machinery until after wildlife have nested
14	Using flushing bars
14	Seeding fall seeded crops
43	Using zero or minimal tillage
100	Maintaining shelterbelts and natural trees
57	Limiting chemical use around water bodies or leaving buffer zones
43	Leaving veg. buffer around wetlands when haying/cultivating
57	Not draining wetlands
29	Limiting grazing around wetlands
57	Removing invasive alien weeds
43	Limiting environmental disturbance from industry

Motivating Factors for Landholders to Consider Species At Risk On Their Land

Percent of Landholders (%)	Motivating Factors
29	Personal pride in being steward
14	Financial benefits
29	General Interest
14	Doing my part for the future

APPENDIX B. List of Acronyms

AC	Acre
ACA	Alberta Conservation Association
AFGA	Alberta Fish and Game Association
ASRD	Alberta Sustainable Resource Development
ASRD – F&W	Alberta Sustainable Resource Development - Fish and Wildlife
ASRD – Lands	Alberta Sustainable Resource Development – Lands
ATPR	Alberta Tourism, Parks and Recreation
AU	Animal Unit
AUM	Animal Unit Month
BACI	Before After Control Impact
BMP	Beneficial Management Practice
ESSR	Ecologically Sustainable Stocking Rate
FWMIS	Fish and Wildlife Management Information System
GIS	Geographic Information System
GNR	Grassland Natural Region
GPS	Global Positioning System
GVI	Grassland Vegetation Inventory
HCS	Habitat Conservation Strategy
MAC	Management Advisory Committee
MCV	Multi-Species Conservation Value
MLA	Member of the Legislative Assembly
MULTISAR	Multiple Species At Risk
OGC	Operation Grassland Community
PCF	Prairie Conservation Forum
RANA	Researching Amphibian Numbers in Alberta
RH	Range Health
SARC	Species at Risk Conservation
SARC Plan	Species at Risk Conservation Plan

For a list of additional reports in the Alberta Fish and Wildlife Division-Species at Risk Report Series please go to our website.

http://www.srd.alberta.ca/FishWildlife/SpeciesAtRisk/ProgramReports.aspx